ZOOSYSTEMATICA ROSSICA

ISSN 2410-0226 [online] 0320-9180 [print]

Zoological Institute, Russian Academy of Sciences, St Petersburg ▪ https://www.zin.ru/journals/zsr/

Vol. 33(2): 325–338 ▪ Published online 18 December 2024 ▪ DOI 10.31610/zsr/2024.33.2.325

RESEARCH ARTICLE

Revision of the genus *Diphora* (Diapriidae: Belytinae) of the West Palaearctic

Ревизия рода *Diphora* (Diapriidae: Belytinae) фауны западной Палеарктики

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Abstract. The genus *Diphora* Förster, 1856 is revised in the circumscription of two previously known species, *D. westwoodii* Förster, 1856 and *D. nearctica* Whittaker, 1931. Two species are described as new to science: *D. belytoides* **sp. nov.**, which has been found in Norway and the Murmansk Province of Russia, and *D. claviscapus* **sp. nov.**, which originates from the Republic of Karelia and the Chelyabinsk Province of Russia. An identification key for three Palaearctic species of *Diphora* is presented. New distribution data and illustrations are provided for all Palaearctic species of the genus. *Diphora nearctica* Whittaker, 1931 is confirmed as a distinct species, and its lectotype (female) is designated. The diagnoses of the genus and the species are clarified.

Резюме. Ревизован род *Diphora* Förster, 1856 в объеме двух ранее известных видов – *D. westwoodii* Förster, 1856 и *D. nearctica* Whittaker, 1931. Два вида, *D. belytoides* **sp. nov.** из Норвегии и Мурманской области России и *D. claviscapus* **sp. nov.** из Карелии и Челябинской области России, описаны как новые для науки. Дана определительная таблица для трех палеарктических видов *Diphora*. Приведены новые данные о распространении и даны иллюстрации всех палеарктических видов рода. Подтверждено, что *D. nearctica* Whittaker, 1931 является самостоятельным видом; обозначен лектотип этого вида (самка). Уточнены диагнозы рода и видов.

Key words: Palaearctic region, Russia, taxonomy, key, lectotype, Diapriidae, *Diphora*, new species

Ключевые слова: Палеарктика, Россия, таксономия, определительный ключ, лектотип, Diapriidae, *Diphora*, новые виды

ZooBank Article LSID: D74E0365-2363-4C59-BECC-60F63F6E3661

Introduction

The specimens of the genus *Diphora* Förster, 1856 are quite rare in collections. Females exhibit a distinctive appearance, primarily due to their antennae, which feature an exceptionally long A3 (Fig. 4D, F). In contrast, males are nearly indistinguishable from the numerous

males of other Belytinae. Förster (1856) described the genus *Diphora* based on the female of *D. westwoodii* Förster, 1856 (the type species by monotypy) and indicated the following generic characters: the female antenna has a very long A3, which is equal in length to A1; segments A4–A14 are transverse; the notauli are deep and distinct; the petiole is short, and T3 is as long as the petiole; the apical segments of the metasoma are retractable; the forewing has a close, long, and moderately narrow radial cell; the marginal vein is short, shorter than the stigmal vein, and these two veins form an acute angle; the post-stigmal vein is nebulous; and the distal part of the postmarginal vein (beyond the radial cell) is short. If we exclude minor inaccuracies from this description (e.g., A3 in females is always slightly shorter than A1), it effectively applies to *Diphora* females, primarily due to the characters of the antennae and metasoma. However, males of *Diphora* exhibit unspecialised filiform antennae and an unmodified metasoma, while all other characters are similar to those found in the genera *Pantoclis* Förster, 1856 and *Belyta* Jurine, 1807. Subsequently, Nixon (1957) proposed distinguishing males of *Diphora* from males of *Pantoclis* by the presence of a "...more or less distinct, transverse secondary keel" on the dorsal side of the propodeum (Fig. 10B).

To date, only two species of the genus *Diphora* are known in the world fauna: *D. westwoodii* Förster, 1856 from Europe and *D. nearctica* Whittaker, 1931 from Hollyburn, Canada (Whittaker, 1931; Johnson, 1992). In the original description, Whittaker (1931) did not compare *D. nearctica* with *D. westwoodii* and did not specify diagnostic characters for this species. As a result, the validity of this taxon, which according to the description is morphologically very similar to *D. westwoodii*, remains questionable. Three species of *Diphora*, described by Kieffer (1908), *D. monticola* from France (Bitsch), *D. nigriceps*, and *D. rufiventris* from the UK (Scotland), were later placed in synonymy under *D. westwoodii* by Nixon in 1957, based on an examination of the type specimens of *D. nigriceps* and *D. rufiventris*, as well as the original description of *D. monticola*.

Nothing is known about the bionomics of any species within this genus. Furthermore, very little information has been published regarding the distribution of *Diphora*, as species of this genus are rarely collected, and the males are challenging to distinguish from those of other genera.

The aim of this study is to revise the West Palaearctic species of the genus *Diphora*, describe two new species, provide new faunistic data and an identification key, and clarify and expand the generic diagnosis.

Material and methods

This study is based mainly on material from the Zoological Institute of the Russian Academy of Sciences, St Petersburg, Russia (ZISP). Additional specimens were obtained from the University Museum, Trondheim, Norway (NTNU), and type material was sourced from the Natural History Museum, London, UK (NHML). Specimens were collected using Malaise traps (MT) and sweep nets.

Morphological terminology and abbreviations follow Yoder (2004), Lanes et al. (2020), Chemyreva & Kolyada (2021), and Yoder et al. (2010). The term *parastigma* is used accordance with Naumann (1982); the terms *occipital pit* and *belytoid line* are defined and illustrated in Chemyreva (2023). The terms used to describe the structures of the mesopleuron is presented in Fig. 1C. The term *propodeal epicoxal lobe* refers to the area located posteriorly and ventrolaterally on the propodeum, which may be bare or may bear relatively large verricule (Fig. 1, yellow arrows). Measurements primarily follow Yoder (2004), with the measurements of wing venation detailed in Chemyreva & Kolyada (2019, 2020). The terminology for surface sculpture follows Eady (1968) and Harris (1979). The terms denoting the relative positions of morphological structures are derived from Goulet & Huber (1993).

New regional and country records are indicated with an asterisk (*).

The photographs were captured at ZISP using a combination of an Olympus SZX10 stereomicroscope and an Olympus OM-D digital camera. The final images were created as stacked composites using Helicon Focus 7.7.4 Pro.

Taxonomy

Order **Hymenoptera**

Family **Diapriidae**

Subfamily **Belytinae**

Genus ***Diphora*** Förster, 1856

Diagnosis. Body black with pale appendages. Head weakly nasiform (Fig. 3B, E, F); mandible bidentate, symmetrical, snuggled to head in rest (Fig. 3A, C, D); occipital carina and occipital pit absent (Fig. 1E, F); A3 of female very long and slightly shorter than A1 (scape) to shorter than half of A1 length (Fig. 4B, D, F). Scutellum without posterior mesoscutellar sulcus; mesopleuron with anterior mesopleural fovea and epicnemial pit fused together (Fig. 1A); subalar impression large, developed along entire length of mesopleuron and crossed by carina (Fig. 1A, white arrows). Forewing with short marginal vein and large close radial cell; radial cell weakly longer than parastigma (Fig. 4A, C, E). Base of T2 (syntergite) and S2 (synsternite) wider than petiole in dorsal and ventral view, narrower than petiole and not overlaping it above and below in lateral view (Figs 8, 9). Apical segments of female metasoma elongate and telescopically retractable (Fig. 8C–F) to short and almost non-retractable (Fig. 8A, B). Ovipositor short, about as long as two-thirds of T3 length. Verricule and verriculate tubercles mainly reduced to completely absent (including in axillar depression) (Figs 1A, B, 6). Propodeal epicoxal lobe present, surrounded by carinae, with relatively large verricule to bare (Fig. 1A, B).

Remarks. The presence of the propodeal epicoxal lobe, whether it has a verricule or not, along with the absence of the occipital carina, are the most significant characters for identifying *Diphora* species. There are groups of species from other Belytinae genera that closely resemble the species of *Diphora* in nearly all important characters except for the two mentioned above. However, the short neck of these species complicates the observation of the head from behind, while the presence of the propodeal epicoxal lobe remains a reliable diagnostic character. The origin of the propodeal epicoxal lobe is unclear. It may be an isolated part of the nucha, as it is usually associated with a relatively large verricule, and the similar verricule is on the adjacent part of the nucha in closely related species from other genera of Belytinae (Fig. 1C, D, G). Alternatively, it could be an isolated part of the lateral side of the propodeum, in which case the verricule (if present) may have originated independently.

Diphora belytoides sp. nov.

(Figs 1A, 2A, D, 3D, E, 4A, B, 5A, B, 6A, 7A, B, 8A, B, 9B, 10A, B)

Holotype. Female, **Russia**, *Murmansk Prov.*, Lapland [Laplandskiy] Nature Reserve, 68.232°N 31.143°E, Pusozero Lake, MT, 18.VII – 19.VIII.2013, A. Humala leg. (ZISP).

Paratypes. **Norway**, *Finnmark*, Svanhovd "Pasvik", 69.4510°N 30.0457°E, MT, 7–14.VIII.2017, P.E. Aspholm leg., 1 male (NTNU); *Troms*, Senja, Ånderdalen, 69.1670°N 17.3869°E, MT, 8.VII – 9.VIII.2023, I. Birkeland leg., 1 male (NTNU); *Trøndelag*, Lierne Raudbergfloan, 64.4541°N 13.9120°E, MT, 4.VII – 14.VIII.2017, O. Hanssen leg., 1 male (NTNU). **Russia**, *Murmansk Prov.*: same data as for holotype, 1 female (ZISP); Pasvik Nature Reserve, 69.1376°N 29.2616°E, 1 km SW of Varlaam I., MT, 3.VIII– 10.X.2007, A. Humala leg., 2 females, 1 male (ZISP); Pasvik Nature Reserve, 69.3737°N 29.8824°E, Menikkayoki River, MT, 6.VII – 14.VIII.2007, A. Humala leg., 1 female (ZISP).

Diagnosis. *Both sexes*. Epomia reduced, pronotal shoulders rounded in dorsal view (Figs 3E, 7A); anterior end of carina, lying within subalar impression of mesopleuron, situated ventral to pronotal spiracle; propodeum without arcuate emargination of posterior margin between plicae in dorsal view; radial cell 1.15 times as long as parastigma (Fig. 4A); base of S2 with deep and short grooves and striation posteriorly (Fig. 9B).

Female. A3 less than 0.4 times as long as A1 (Fig. 4B); scutellum flat; mesosoma depressed, 1.25 times as wide as high; foramen between anterior scutellar pit and axillar depression tiny, hardly visible (Fig. 6A); propodeum and petiole dorsally areolate-rugose (Figs 7A, 8A); hind and mid femora stout, with indistinct basal stalk (Fig. 8B), concave, smooth, bare inner surfaces; inner sides of fore femora slightly concave, with sharp margin ventrally; fore tibia with scattered, strong bristles; apical segments of metasoma short, not telescopically retractable, T3 0.3 times as long as petiole (Fig. 8A, B).

Male. Mesonotum and scutellum distinctly convex; mesosoma very weakly depressed, 1.1 times

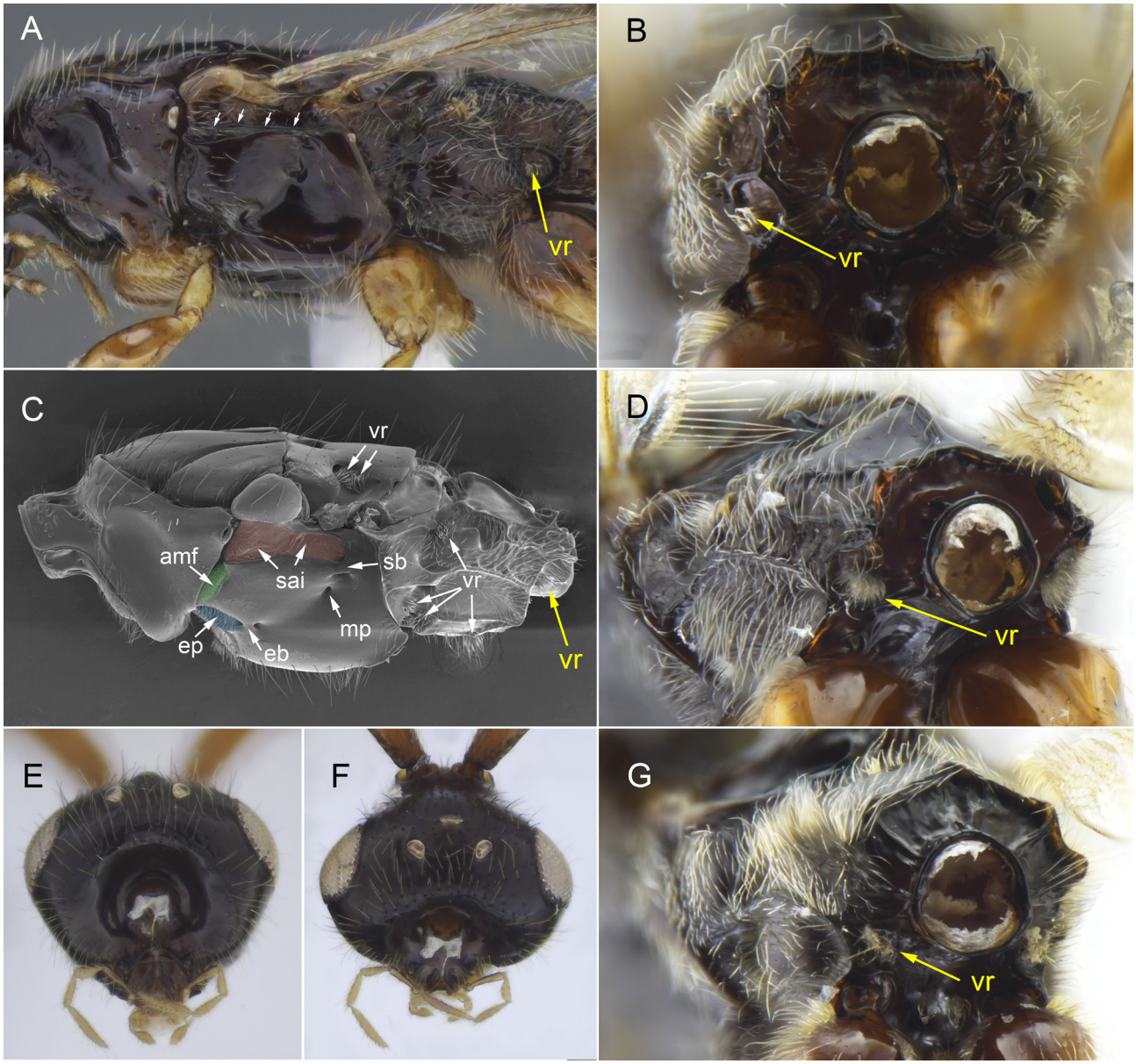

Fig. 1. Morphological characters of species of *Diphora* Förster, 1856 and closely related genera. **A**, *Diphora belytoides* **sp. nov.**; **B**, **E**, **F**, *D. westwoodii* Förster, 1856; **C**, *Belyta* sp. (SEM by Lars Vilhelmsen, from https://www.morphbank.net); **D**, *Synbelyta fuscipennis* (Thomson, 1858); **G**, *Zygota breviuscula* (Thomson, 1858). Mesosoma, lateral view (A, C); propodeum, caudal view (C); propodeum, caudolateral view (D, G); head in caudal and dorsocaudal view, respectively (E, F). Abbreviations: *amf* – anterior mesopleural fovea; *eb* – epicnemial bridge; *ep* – epicnemial pit; *mp* – mesopleural pit; *sai* – subalar impression; *sb* – subalar bridge; *vr* – verricule.

as wide as high; A3 cilindrical (not widened), weakly emarginate in its basal one-third (Fig. 5A, B); legs slender except for hind femur being stout and almost lacking basal stalk; propodeum dorsally slightly rugose, tapering posteriorly, with V-shaped emargination of posterior margin between plicae (Fig. 10B); petiole longitudinally rugose, 1.7 times as long as wide (Fig. 10B).

Description. *Female* (holotype). Body length 2.8 mm, antenna length 1.3 mm, wing length 2.2 mm. Body mainly black, with dark brown gaster; flagellum, mandible and tegula dark brown; scapus, palpi, legs and wing venation pale brown.

Head in dorsal view slightly transverse (measured with antennal shelf), 1.15 times as wide as long, in lateral view, opisthognathous, as high as

Fig. 2. Scapi of females of *Diphora* spp. **A**, **D**, *D. belytoides* **sp. nov.**; **B**, **E**, *D. claviscapus* **sp. nov.**; **C**, **F**, *D. westwoodii* Förster, 1856. Lateral (A–C) and ventral (D–F) view.

long. Toruli separated from each other by narrow and shallow furrow, from frons posteriorly by deep, narrow and bare furrow. Frons densely punctured and pubescent. Ocelli small, OOL 2.2 times as long as POL, LOL 0.8 times as long as POL. Eye scarcely setose, 1.3 times as high as malar space. Pleurostomal distance as long as malar space. Face rugose between toruli and clypeus. Subantennal furrows shallow but distinct. Epistomal sulcus distinct. Clypeus convex, scarcely setose and punctured, 1.2 times as wide as high. Tentorial pits large, situated in hollows.

Antenna 15-segmented. A1 as long as A2–A6 combined, slightly curved, with simple apical rim; its outer side shiny, smooth, bare, below bounded by carina (like dotted line), forked apically; inner side finely coriaceous, setose. A4–A14 transverse, about 1.4 times as long as wide. A15 1.6 times as long as wide.

Mesosoma 1.1 times as wide as head. Neck short, wide; pronotal colar and neck oreolate-rugose; lateral part of pronotum smooth, shining, strongly impressed, bare anteriorly, distinctly convex, setose posteriorly. Mesonotum flat, with percurrent notauli; anteromedian lines invisible. Scutellum flat, with setigerous punctures laterally, bare medially; anterior scutellar pit circular. Axillar depressions smooth, densely pubescent, with verricule. Mesopleuron predominantly pubescent, with bare area medially; mesopleuron mainly smooth, with mesopleural pit, epicnemial and acetabular bridges, and pubescent subalar impression (Fig. 7B). Metascutellum rugose, with median and lateral carinae. Metanotal trough crenulate, bare. Propodeum 1.6 times as wide as long. Plicae slightly converging posteriorly. Lateral side of propodeum below plicae with four longitudinal carinae (from top to bottom): lateral longitudinal carina, metapleural carina, metapleural epicoxal carina, and submetapleural carina. Legs as described in diagnosis; fore tarsus 1.4 times as long as fore tibia, mid and hind tarsi 0.9 times as long as their tibiae.

Wings. Marginal vein short, twice as long as wide (measured medially), three times as long as parastigma. Radial vein slightly curved posteriorly. Stigmal and postmarginal veins forming angle 65°, stigmal vein 0.75 times as long as marginal vein.

Metasoma. Petiole cylindrical, dorsally bare and coriaceous, ventrally and laterally carinate and shortly pubescent. Base of T2 with lateral corners, deep, long medial furrow, with lateral depression and striation inside (Fig. 8A); T2 with scattered setae. T3–T6 short, equal in length. T3 and T4 setose, smooth laterally, bare, with small micropunctured area medially. T5 and T6 smooth, with transverse row of setae. T7 convex, setose, semicircular, finally coriaceous between spiracles. T8 small, smooth, setose. S2 with complete belytoid line, entirely pubescent ventrally, bare above belytoid line; base of S2 with two deep, long furrows medially and subtriangular lateral depression being sculptured inside; dense striation present posteriorly of these furrows and depressions. S3–S5 short, each with transverse row of setae and fine coriaceous sculpture laterally. S6 as long as length of S3–S5 combined, entirely setose.

Male. Body length 2.8 mm. Similar to female except following characters: head distinctly transverse, 1.5 times as wide as long (measured with antennal shelf), 0.9 times as wide as mesosoma (Fig. 10A); antenna 14-segmented, with A1 as long as A3; A4–A13 cylindrical, each 3.2 times as long as wide; A3 with keel and emargination extending to 0.25 of segment (Fig. 5B). Mesosoma as high as wide; lateral part of pronotum weakly

Fig. 3. Heads of females of *Diphora* spp. **A**, **B**, *D. claviscapus* **sp. nov.**; **C**, **F**, *D. westwoodii* Förster, 1856; **D**, **E**, *D. belytoides* **sp. nov.** Frontal (A, C, D) and dorsal (B, E, F) view. Scale bars: 0.5 mm.

convex posteriorly; hole between anterior scutellar pit and axillar depression large, closed by cuticular septum.

Etymology. The specific name is derived from the generic name *Belyta* Jurine, 1807 and the suffix *-oides* (-like).

Distribution. Norway, Russia (European part).

Diphora claviscapus sp. nov.

(Figs 2B, E, 3A, B, 4C, D, 5C, D, 6B, 7C, D, 8C, D, 10C, D)

Holotype. Female, **Russia**, *Republic of Karelia*, Paanayarvi National Park, Siltayoki River, 66.2835°N 30.4622°E, MT, 28.VII – 29.IX.2021, A. Humala leg. (ZISP).

Paratypes. **Russia**, *Chelyabinsk Prov.*, Ilmen' Nature Reserve, vicinity of Ilmen' Lake, 13–18.VII.1958, V. Tobias leg., 2 females, 1 male (ZISP).

Diagnosis. *Both sexes*. Epomia strongly protruding as carina, pronotal shoulders projecting, pointed in dorsal view (Figs 3B, 7C); anterior end of carina, lying within subalar impression of mesopleuron, situated dorsal to (or at same level as) pronotal spiracle; propodeum almost without arcuate emargination of posterior margin between plicae in dorsal view (Fig. 7C), plica and lateral longitudinal carina slightly projecting posteriorly

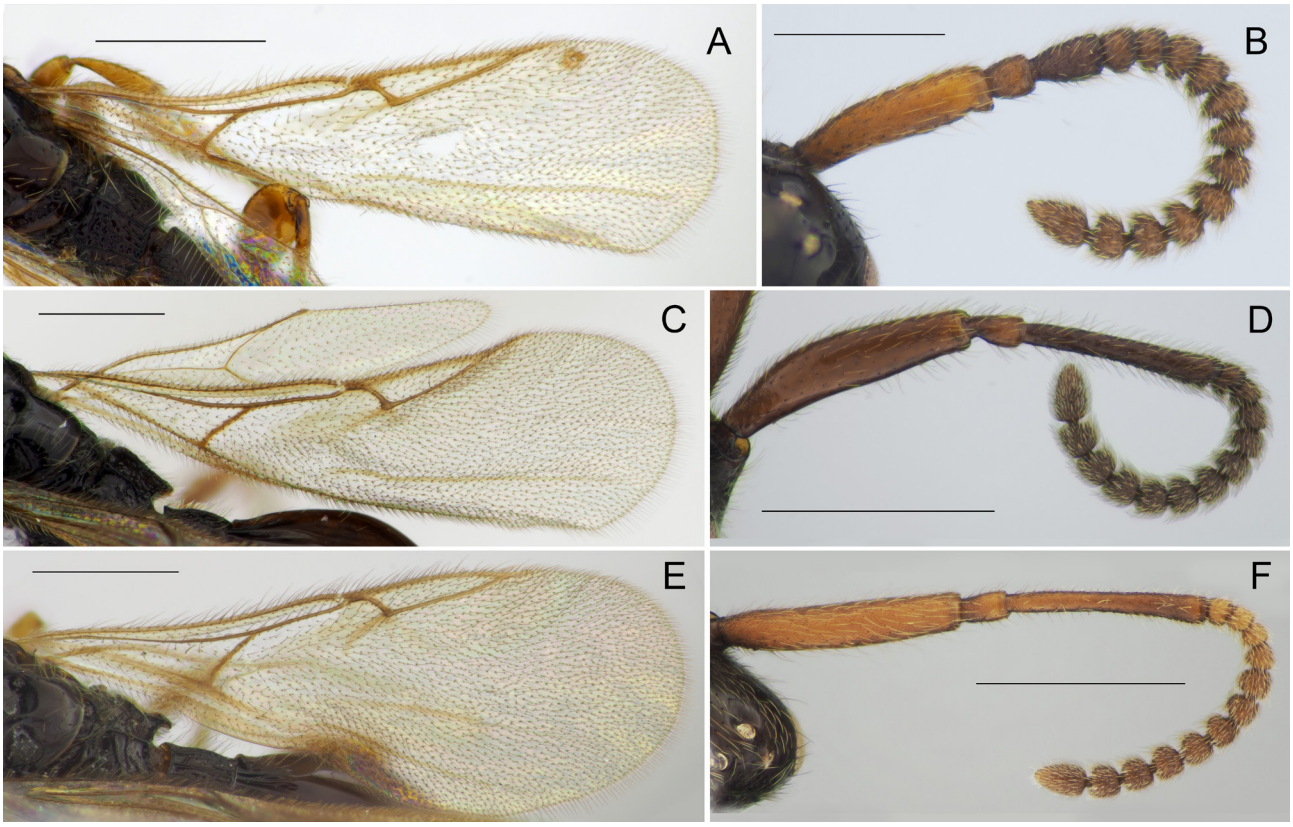

Fig. 4. Morphology of females of *Diphora* spp. **A**, **B**, *D. belytoides* **sp. nov.**; **C**, **D**, *D. claviscapus* **sp. nov.**; **E**, **F**, *D. westwoodii* Förster, 1856. Fore wing (A, C, E); antennae (B, D, F). Scale bars: 0.5 mm.

(Figs 6B, 8C); base of S2 with deep, long grooves and striation which not extending beyond these grooves (Fig. 9A).

Female. A1 distinctly widened medially in lateral view (Fig. 2B); A3 0.8 times as long as A1 or longer (Fig. 4D); scutellum flat; mesosoma slightly depressed, 1.15 times as wide as high (Fig. 6B); foramen between anterior scutellar pit and axillar depression small, closed by cuticular septum (Fig. 6B); propodeum dorsally areolate-rugose (Fig. 7C); hind and mid femora stout, with indistinct basal stalk and convex, smooth, bare inner surfaces; radial cell 1.1–1.2 times as long as parastigma (Fig. 4C); petiole reticulate, about 1.1 times as long as wide (Fig. 8C); apical segments of metasoma elongate, telescopically retractable, T3 as long as petiole (Fig. 8C, D).

Male. Mesonotum and scutellum distinctly convex; mesosoma not depressed, as wide as high; A3 distinctly emarginated in its basal 0.45, widened medially (Fig. 5C, D); legs slender; propodeum dorsally rugose, secondary transverse carina inconspicuous; radial cell 1.3 times as long as parastigma; petiole longitudinally rugose, as long as wide in dorsal view (Fig. 10D).

Description. *Female* (holotype). Body length 3.2 mm, antenna length 1.7 mm, wing length 2.2 mm. Body mainly black, with gaster dark brown; flagellum, mandible, tegula and wing venation dark brown; scapus, palpi and legs pale brown.

Head in dorsal view slightly transverse (measured with antennal shelf), 1.2 times as wide as long, in lateral view, opisthognathous, 1.05 times as high as long. Toruli separated from each other by narrow and shallow furrow, from frons posteriorly, by deep, narrow and bare furrow. Frons densely punctured and pubescent. Ocelli small, OOL 1.4 times as long as POL, LOL 0.6 times as long as POL. Eye scarcely setose, 1.3 times as high as malar space. Pleurostomal distance as long as malar space. Face slightly rugose medially below toruli. Subantennal furrows and epistomal sulcus distinct. Clypeus convex, scarcely setose and punctured, as wide as high. Tentorial pits large.

Fig. 5. Antennae of males of *Diphora* spp., dorsal view. **A**, **B**, *D. belytoides* **sp. nov.**; **C**, **D**, *D. claviscapus* **sp. nov.**; **E**, **F**, *D. westwoodii* Förster, 1856. Scale bars: 0.5 mm.

Antenna 15-segmented. A1 as long as A2–A3 combined, slightly curved, with simple apical rim; its outer side shiny, smooth, bare, inner side finely coriaceous, setose. A4–A14 transverse, about 1.2 times as long as wide. A15 1.7 times as long as wide.

Mesosoma 1.1 times as wide as head. Neck short, wide; pronotal colar and neck oreolate-rugose; lateral part of pronotum strongly impressed, smooth and shining, bare anteriorly and setose posteriorly. Mesonotum slightly convex, with percurrent notauli and faint antero-median lines. Scutellum weakly convex, predominantly with setiferous punctures, bare medially; anterior scutellar pit circular. Axillar depressions smooth, densely pubescent, without verricule. Mesopleuron predominantly pubescent, with bare area medially and posterodorsally, smooth, with deep mesopleural pit, with epicnemial and acetabular bridges, and pubescent subalar impression (Fig. 7D). Metascutellum rugose, with median, lateral and transverse carinae. Metanotal trough crenulate, bare. Propodeum twice as wide as long. Plicae slightly converging posteriorly. Lateral side of propodeum below plicae with four longitudinal carinae (from top to bottom): lateral longitudinal carina, metapleural carina, metapleural epicoxal carina, and submetapleural carina. Femora as described in diagnosis, other parts of legs unspecialised; fore, mid and hind tarsi about 1.3, 1.1 and 1.0 times as long as their tibiae, respectively.

Wings. Marginal vein short, 2.5 times as long as wide (measured medially), 4.2 times as long as parastigma. Radial vein slightly curved posteriorly. Stigmal and postmarginal veins forming angle 61°, stigmal vein 1.4 times as long as marginal vein.

Metasoma. Petiole cylindrical, dorsally bare and coriaceous, ventrally and laterally carinate and shortly pubescent. Base of T2 with lateral corners, deep and long medial and lateral furrows, and striation flanked at each side (Fig. 8C). T2 predominantly bare, with few setae posteriorly. T3 with scattered setae laterally and small area of micropunctures medially. T3 as long as T4, each about 1.5 times as long as T5. T4 and T5 smooth, mainly bare, with few setae along posterior margins. T6 hidden. T7 convex, setose, smooth, semicircular. T8 small, smooth, setose. S2 with complete belytoid line, entirely pubescent ventrally, bare above belytoid line; base of S2 with two deep, long furrows medially and subtriangular lateral depression being sculptured inside; striation present between median furrows and lateral to them but not posteriorly. S3 with belytoid line in anterior quarter, coriaceous posteriorly. S3 as long as S4, each 1.5 times as long as S5. S4 and S5 mainly bare, with few setae along posterior margins. S6 shorter than S5, subtriangular, setose.

Male. Body length 2.5 mm. Similar to female except following characters: head distinctly transverse, 1.5 times as wide as long (measured with antennal shelf), 0.9 times as wide as mesosoma; antenna 14-segmented, with A1 as long as A2 and A3 combined, A4–A13 cylindrical, 4.0 times as long as wide; A3 with keel and emargination extending to 0.45 of segment (Fig. 5E); mesosoma as high as wide, with large hole between anterior scutellar pit and axillar depression.

Etymology. The specific name is a noun in apposition, derived from the Latin nouns *clava* (club) and *scapus* (stem, stalk), meaning "club stem" and referring to the swollen antennal scape.

Distribution. Russia (European part and Ural).

Diphora westwoodii Förster, 1856
(Figs 1B, E, F, 2C, F, 3C, F, 4E, F, 5E, F, 6C, 7E, F, 8E, F, 9A, 10E, F)

Diphora westwoodii Förster, 1856: 141.
Diphora monticola Kieffer, 1908: 417. Synonymised by Nixon (1957: 41).
Diphora nigriceps Kieffer, 1908: 419. Synonymised by Nixon (1957: 41).
Diphora rufiventris Kieffer, 1908: 419. Synonymised by Nixon (1957: 41).

Type material examined. *Holotype* of *D. rufiventris*, female, "Diphora / rufiventris / K.", "273", "Cameron Coll. / 1909–182", "Type", "B.M. TYPE / HYM. / 9. 35" (NHML). *Holotype* of *D. nigriceps*, female, "nigriceps K.", "515.", "Cameron Coll. / 1909.182.", "Type", "HOLOTYPE♀ / Diphora/ nigriceps Kieff.", "B.M. TYPE / HYM./ 9. 34", "NHMUK 013380907" (NHML).

Non-type material examined (all in ZISP). **England**, *East Kent*, Cossington Fields & Malling Wood, "TQ76", VI.2001, flight intercept & pitfall traps, M. Barclay leg., 3 females, 9 males. **Norway**, *Aust-Agder*, Lillesand, Grimevannet, 58°19.4′N 8°20.2′E, MT, 30.VI – 23.VIII.2011, A. Humala et al. leg., 2 females, 3 males; *Oppland* [former county]: Vestre Gausdal, Hütte Kittilbu, 807 m a.s.l., 25.VI.2011, yellow pan trap, A. Reshchikov leg., 2 males; Ormtjernkampen National Park [former], MT, 990 m a.s.l., birch forest, 61°08.1′N 9°43.1′E, 25.06.2011, A. Reshchikov & L. Kopilyas leg., 3 females, 1 male. **Germany**, *Bavaria*: Siegenburg, Bombodrom, edge of a pine forest, very poor sandy grassland, 48.75969°N 11.80655°E, 410 m a.s.l., MT, 2.VIII – 8.IX.2017, D. Doczkal & J. Voith leg., 1 female; München, Nature Conservation Reserve "Allacher Lohe", 48.19879°N 11.47544°E, 502 m a.s.l., MT, 8–23.VI.2021, R. Albrecht leg., 2 females; Marktredwitz, urban forest, 50.01098°N 12.043509°E, 625 m a.s.l., MT, 1–16.VII.2019, J. Müller leg., 2 males. **Ukraine**, *Zakarpattya Prov.*, Pozhyzhevs'ka Mt., 22–28.VII.1989, D. Kasparyan leg., 1 male. **Russia**, *Novgorod Prov.*, Pestovo Distr., Tychkino Vill., 1–3.VIII.1992, V. Tobias leg., 1 female; *Kirov Prov.*, Bol'sheromanovo Vill., 4–15.VIII.1994, V. Kolyada leg., 1 female, 3 males.

Diagnosis. *Both sexes*. Epomia strongly protruding as carina, pronotal shoulders projecting, pointed in dorsal view (Figs 3F, 7E); anterior end of carina, lying within subalar impression of mesopleuron, situated dorsal to pronotal spiracle; propodeum with deep arcuate emargination on posterior margin between plicae in dorsal view; propodeum with distinct transverse carinae anteriorly and with plica and lateral longitudinal carina distinctly projecting posteriorly (Figs 6C, 8E); S2 with deep, long grooves and striation not extending beyond these grooves (Fig. 9A).

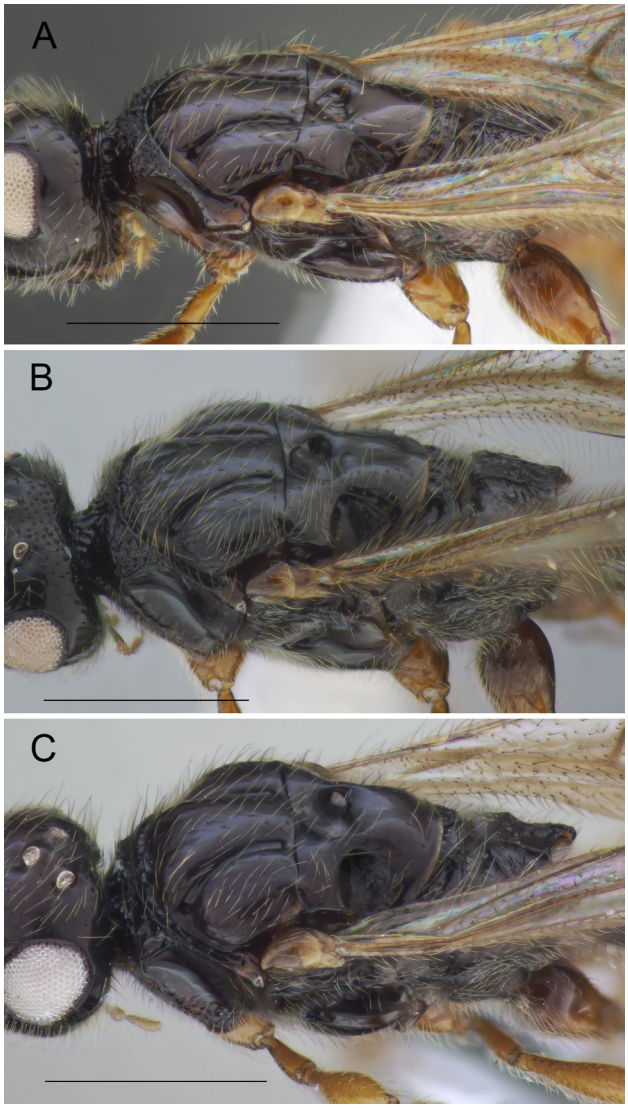

Fig. 6. Mesosomas of females of *Diphora* spp., dorsolateral view. **A**, *D. belytoides* **sp. nov.**; **B**, *D. claviscapus* **sp. nov.**; **C**, *D. westwoodii* Förster, 1856. Scale bars: 0.5 mm.

Female. A1 cylindrical, not widened medially in lateral view (Fig. 2C); A3 0.8 times as long as A1 or longer (Fig. 4F); foramen between anterior scutellar pit and axillar depression large, open (Fig. 6C); scutellum convex, mesosoma as wide as high, not

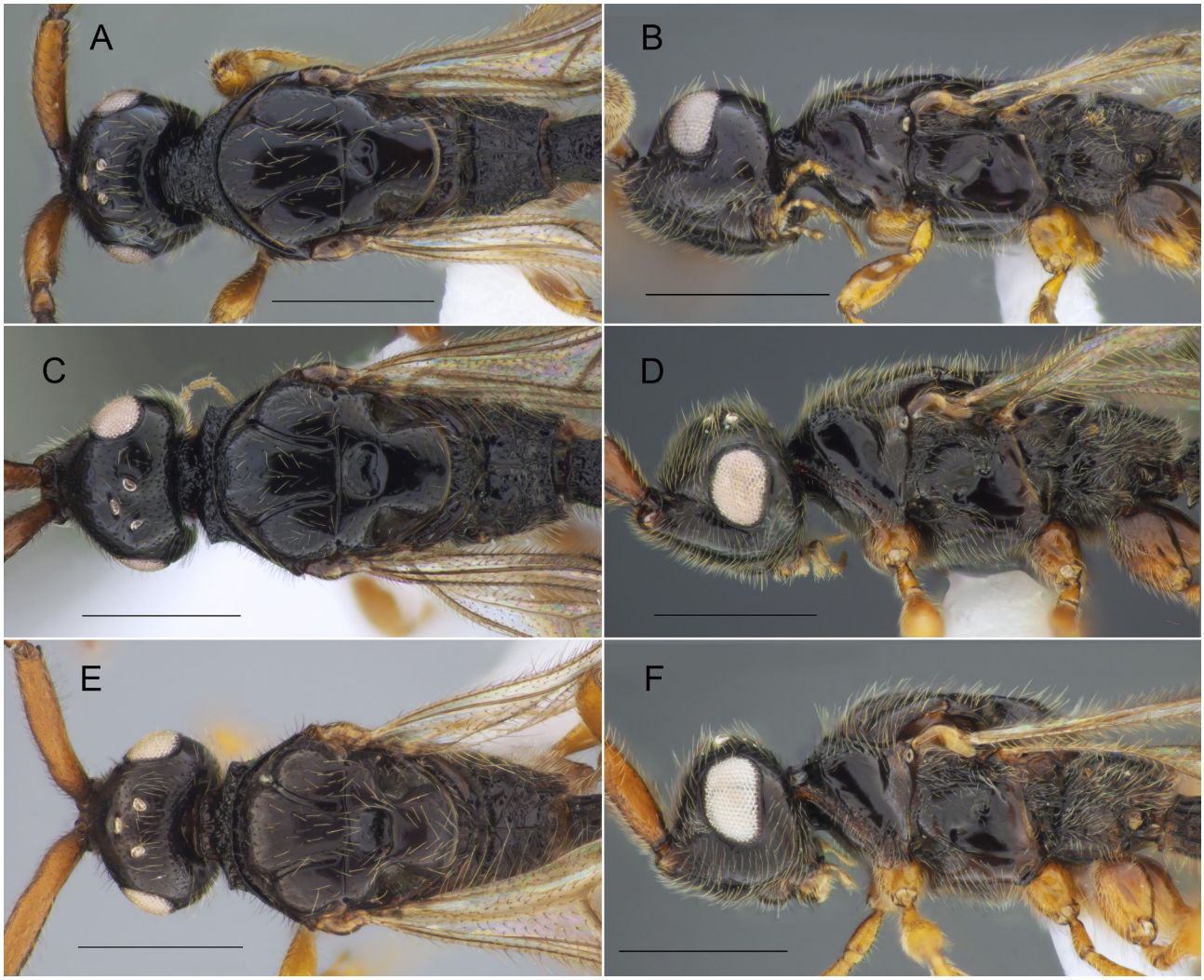

Fig. 7. Heads and mesosomas of *Diphora* spp. **A**, **B**, *Diphora belytoides* **sp. nov.**; **C**, **D**, *D. claviscapus* **sp. nov.**; **E**, **F**, *D. westwoodii* Förster, 1856. Dorsal (A, C, E) and lateral (B, D, F) view. Scale bars: 0.5 mm.

depressed (Fig. 6C); propodeum dorsally weakly to distinctly rugose, with more or less distinct secondary transverse carinae anteriorly (Figs 7E, 8E); all femora slender, their inner surfaces convex, smooth, bare; radial cell 1.2 times as long as parastigma (Fig. 4E); petiole carinate, usually more than 1.1 times as long as wide (Fig. 8E, F); apical segments of metasoma elongate, telescopically retractable, T3 as long as petiole (Fig. 8E, F).

Male. Mesonotum and scutellum distinctly convex; mesosoma not depressed, as wide as high; A3 distinctly emarginated in basal one-third, slightly widened at top of emargination (Fig. 5E, F); legs slender; radial cell 1.4 times as long as parastigma; propodeum dorsally transverse, rugose to almost smooth; secondary carinae on dorsal side of propodeum more or less distinct, forming obtuse angle and fused posteriorly with plica in its middle; petiole covered with elongate carinae, 1.0–1.2 times as long as wide (Fig. 10F).

Variability. Body length (from top of antennal shelf to end of T3) 2.4–2.6 mm in females, 2.3–2.5 mm in males; head and mesosoma dark brown, metasoma from dark brown to reddish, appendages pale, usually yellowish brown; propodeum dorsally rugose to almost smooth, with oblique, more or less transverse carinae; petiole 1.1–1.4 times as long as wide in females, 1.2–1.5 times in males.

Remarks. The holotypes of *D. nigriceps* and *D. rufiventris* have been reexamined, and we confirm the synonymy of these names here. The holotype of *D. monticola* was not studied by Nixon

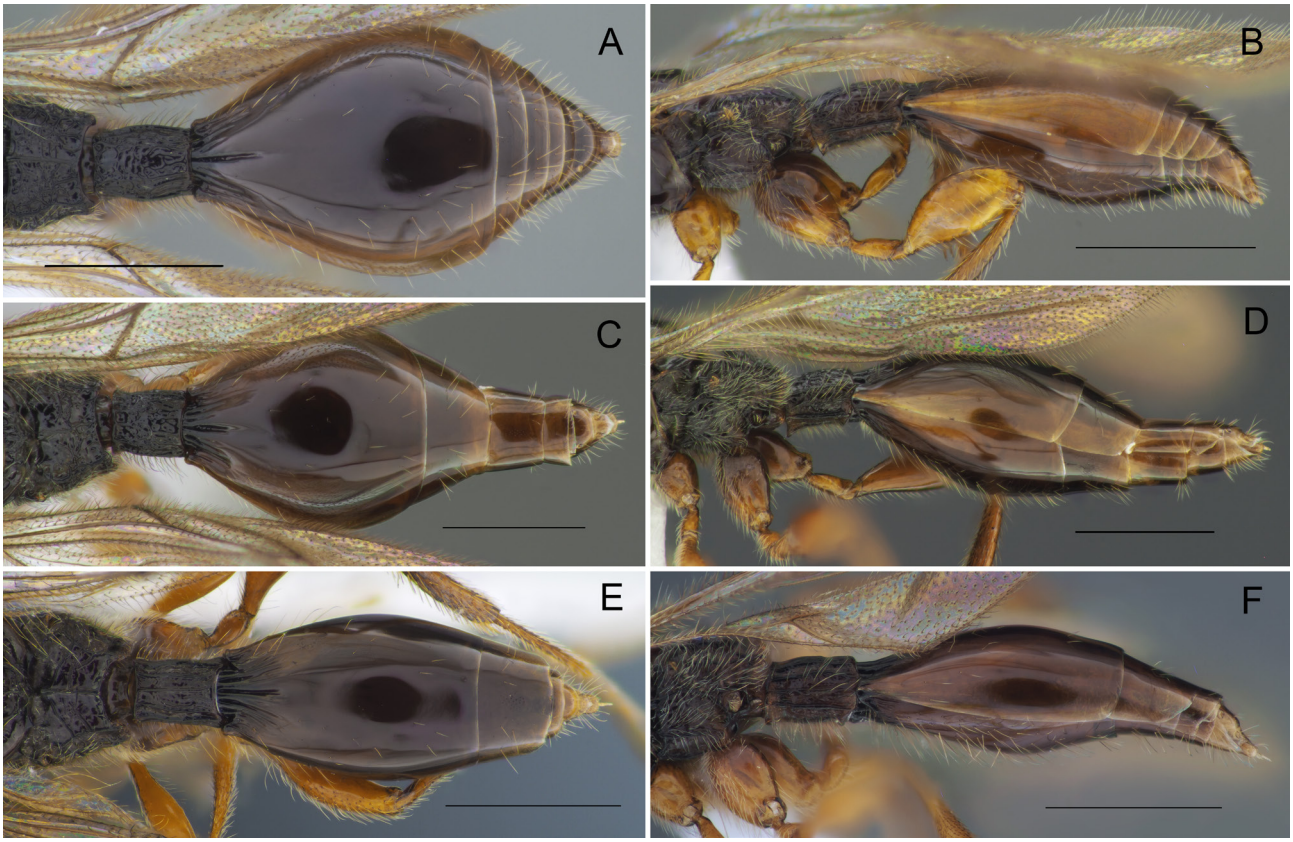

Fig. 8. Metasomas of females of *Diphora* spp. **A**, **B**, *D. belytoides* **sp. nov.**; **C**, **D**, *D. claviscapus* **sp. nov.**; **E**, **F**, *D. westwoodii* Förster, 1856. Dorsal (A, C, E) and lateral (B, D, F) view. Scale bars: 0.5 mm.

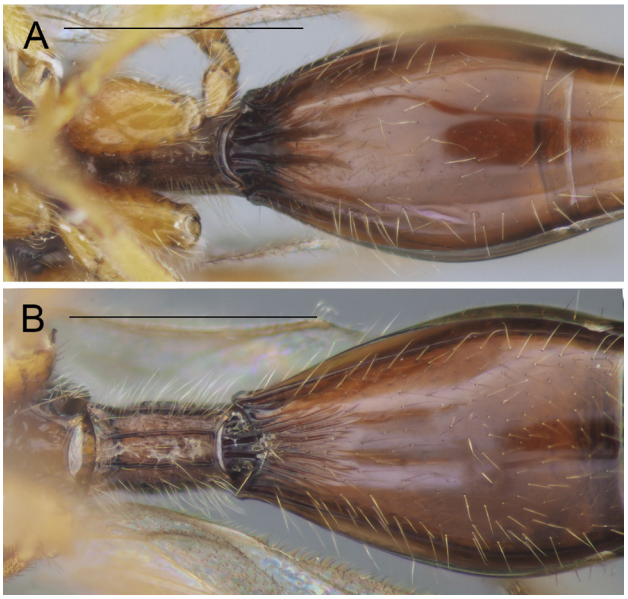

Fig. 9. Metasomas of females of *Diphora* spp., ventral view. **A**, *D. westwoodii* Förster, 1856; **B**, *D. belytoides* **sp. nov.** Scale bars: 0.5 mm.

(1957), and we were unable to locate it. However, Kieffer (1908) noted in the original description that this species is similar to his other two species and differs from them only in the sculpture of the dorsal surface of the propodeum and in the ratio of the length to the width of the petiole (the petiole is 1.1–1.5 times as long as wide). We are convinced that this variability is intraspecific.

Distribution. United Kingdom (Kieffer, 1908; Nixon 1957), Norway*, The Netherlands (Thomas, 1997), Germany (Blank, 2001), France (Kieffer, 1908), Ukraine*, Russia* (European part).

Key to West Palaearctic species of *Diphora*

Females

1. A3 0.8 times as long as A1 or longer (Fig. 4D, F); epomia strongly protruding as carina, pronotal shoulders projecting, pointed in dorsal view (Figs 3B, F, 7C, E); apical segments of metasoma elongate, telescopically retractable, T3 as long as petiole (Fig. 8C–F) 2

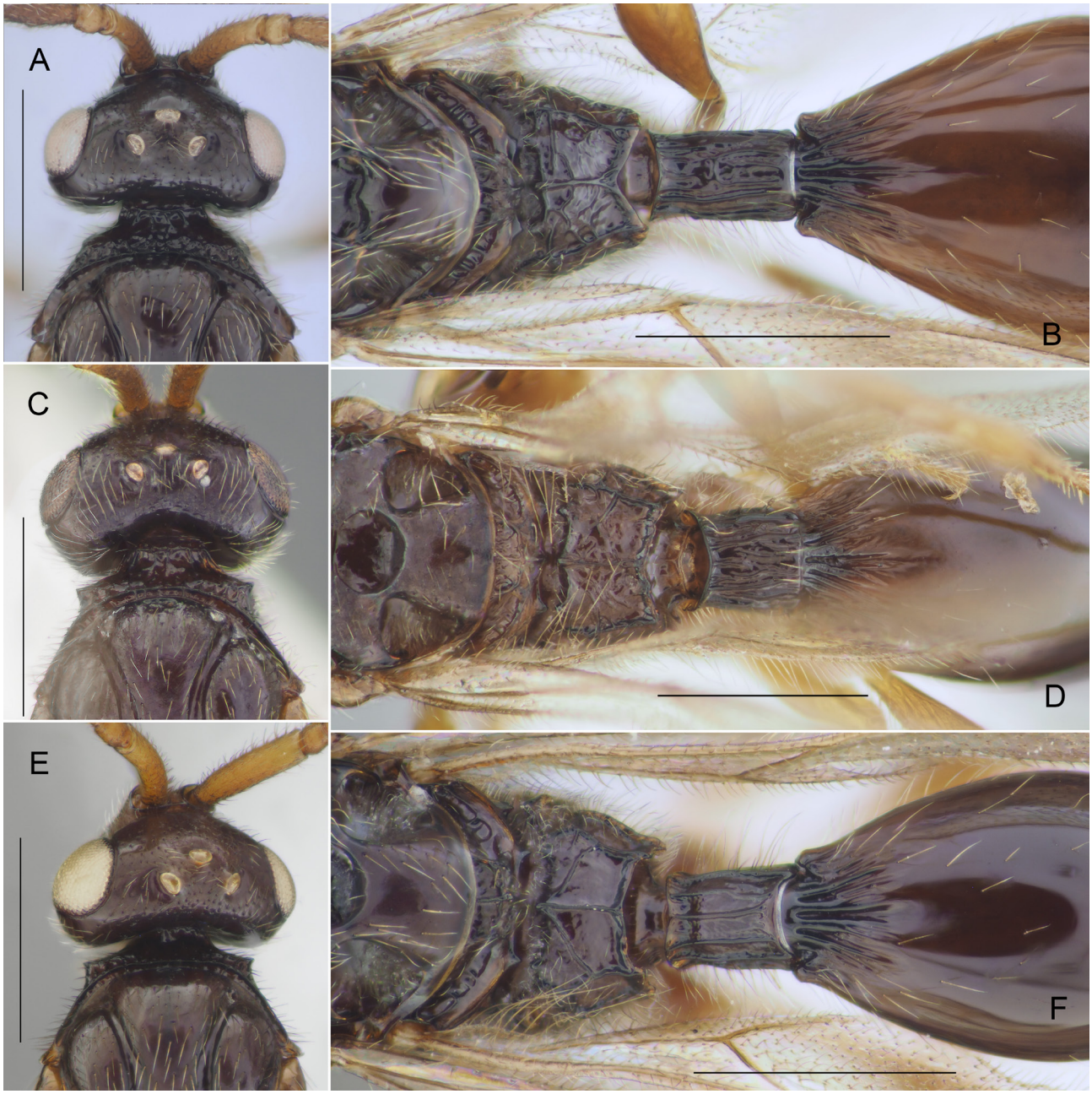

Fig. 10. Morphology of males of *Diphora* spp., dorsal view. **A**, **B**, *D. belytoides* **sp. nov.**; **C**, **D**, *D. claviscapus* **sp. nov.**; **E**, **F**, *D. westwoodii* Förster, 1856. Head (A, C, E); median part of body (B, D, F). Scale bars: 0.5 mm.

– A3 less than 0.4 times as long as A1 (Fig. 4B); epomia reduced, pronotal shoulders rounded in dorsal view (Figs 3E, 7A); apical segments of metasoma short, not telescopically retractable, T3 0.3 times as long as petiole (Fig. 8A–B) ..... ***D. belytoides* sp. nov.**

2. A1 distinctly widened medially in lateral view (Fig. 2B); petiole reticulate, about 1.1 times as long as wide (Fig. 8E, F); scutellum flat, mesosoma slightly depressed, 1.15 times as wide as high (Fig. 6B); propodeum with plica and lateral longitudinal carina slightly projecting posteriorly (Figs 6B, 8C) .. ***D. claviscapus* sp. nov.**

– A1 cylindrical, almost not widened medially in lateral view (Fig. 2C); petiole carinate, usually more than 1.1 times as long as wide (Fig. 8E, F); scutellum convex, mesosoma as wide as high, not depressed (Fig. 6C); propodeum with plica and lateral longitudinal carina distinctly projecting posteriorly (Figs 6C, 8E) ..... ***D. westwoodii***

Fig. 11. *Diphora nearctica*, female lectotype. **A**, body in dorso-lateral view; **B**, propodeum, petiole and base of T2; **C**, antenna; **D**, labels.

Males

1. Pronotal shoulders weakly projecting, rounded in dorsal view (Fig. 10A); A3 with very weak emargination (Fig. 5B) ..... ***D. belytoides* sp. nov.**
– Pronotal shoulders strongly projecting, pointed in dorsal view (Fig. 10C, E); A3 with distinct emargination (Fig. 5D, F) 2
2. A3 with emargination extending to 0.25 of segment (Fig. 5E, F); propodeum with distinct transverse carinae anteriorly and with plica and lateral longitudinal carina distinctly projecting posteriorly (Figs 6C, 8E) ..... ***D. westwoodii***
– A3 with emargination extending to 0.45 of segment (Fig. 5C, D); propodeum without transverse carinae anteriorly, with plica and lateral longitudinal carina slightly projecting posteriorly (Figs 6B, 8C) ..... ***D. claviscapus* sp. nov.**

Non-Palaearctic species

Diphora nearctica Whittaker, 1931
(Fig. 11A–D)

Diphora nearctica Whittaker 1931: 74.

Type material examined. *Lectotype* (designated here), female, **Canada**, *British Columbia*, "Hollyburn B.C. 18.VII.29 Coll. O.W", "CANADA: O. Whittaker Coll. per. W.H. Storey. B.M. 1947-212", "*Diphora nearctica* Whitt. ♀ Det. O. Whittaker", NHMUK 013380908 (NHML).

Remarks. We have examined the female syntype of *D. nearctica* from the NHML collection and found that this species is closely related to *D. westwoodii*. However, *D. nearctica* differs in that the plica and lateral longitudinal carina do not project posteriorly, the propodeum lacks emargination of the posterior margin between the plicae in dorsal view (the latter character is similar to that of *D. claviscapus*, but *D. nearctica* differs from it in the shape of the scape and petiole), and the secondary carinae on the dorsal side of the propodeum form an acute angle and are fused with the plicae at the posterior apex of the propodeum (Fig. 11). Therefore, we confirm that *D. nearctica* is a distinct species.

Distribution. Canada (British Columbia).

Acknowledgements

We are very thankful to Joseph Monks (NHML) for providing crucial information and images of the type material. We also wish to thank the Hymenoptera Section of the Zoologische Staatssammlung München, Munich, Germany, particularly Jeremy Hubner, for supplying additional material for this study. Our appreciation goes to Dr Frode Ødegaard (NTNU) for identifying the NTNU material of *D. belytoides* and for his valuable assistance in reviewing the initial draft of this paper. This work was based on the taxonomic collection of ZISP and was partially funded by State

Research Project No. 122031100272-3 for V.G. Chemyreva. The study of A.E. Humala was carried out under the state order for the Karelian Research Centre of the Russian Academy of Sciences (Forest Research Institute).

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Received 21 July 2024 / Accepted 10 December 2024. Editorial responsibility: A.I. Khalaim & D.A. Gapon